REMARKS

35 U.S.C. 102

Claims 1, 4-5, 7-8, 10-14 and 16 were rejected under 35 U.S.C. 102(b) as being anticipated by Chan EY (US Patent # 6210896). Claims 1, 4-5, 7-8, 10-14 and 16 were rejected under 35 U.S.C. 102(e) as being anticipated by Chan EY (US Patent # 6355420). Applicants respectfully traverse the rejection. Claims 1, 4-5, 7-8, 10-14 and 16 were rejected under 35 U.S.C. 102(a) as being anticipated by Chan EY (US Patent # 6355420). Applicants respectfully traverse these rejections.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegall Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Independent claim 1 recites, *inter alia*, "passing the labeled proteins, polypeptides or peptides through one or more nanopores, an inner surface of the nanopores coated with a semiconductor material." This feature is not taught by US Patent No. 6,210,896 or US Patent No. 6,355,420.

In rejecting claims 1, 4-5, 7-8, 10-14 and 16, the Examiner states,

> Additionally, Example 6 of the reference teaches that polymer is pulled closer to tip using dielectric forces created by applying an AC field to electrode and waveguide, i.e., metal layers, in addition to the DC field applied across wires. The AC field applied capacitively with respect to the DC field generates an inhomogeneous field in nanochannel (see column 36, lines 14-19), **meeting the limitation of inner surface of the nanopores coated with a semiconductor material.** As evidenced by the instant specification, "the sensor layers may comprise semiconductor material including, but not limited to, silicon, silicon dioxide, silicon nitride, germanium, gallinium arsenide, and/or metal-based compositions such as metals or metal oxides (see paragraph [0078] of instant specification US 2005/0282229 A1). Therefore, the reference meets the limitations of claims 1, 4-5, 7-8, 10-14 and 16. (Office action, page 6, lines 1-11)(Emphasis added).

The Examiner appears to be confused as to what constitutes a semiconductor material. Semiconductors and insulators have a band gap between the valence and conduction bands, with semiconductors having small band gaps relative to insulators. See the attached Wikipedia entry on Semiconductors. Metals, in contrast do not have a band gap. The portion of Example 6 cited by the Examiner clearly states that the polymer of Chan is coated by a metal. The fact that the application of an AC electric filed to the applied DC field generates an inhomogeneous field is irrelevant to the materials used. Simply, the application of an electric field to a metal does not change the fundamental properties of the metal or convert the metal into a semiconductor.

Further, the inventive teachings of an applicant can not be used against him. *In re Lam*, 35 Fed.Appx. 889, 897-98 (Fed. Cir. 2002)("In *In re Ruff*, our predecessor court reversed an obviousness rejection based on an applicant's own disclosure that two classes of organic compounds (amino and mercapto compounds) were both effective tarnish inhibitors. Though the amino compounds were known in the art, the applicant himself invented and taught the use of the mercapto compounds. The board in the *Ruff* case mistakenly interpreted several earlier cases to hold that such a disclosure by an applicant could support a finding of equivalency. The court disabused the Board of that notion and squarely held that the applicants' own teaching of the tarnish-fighting mercapto compounds, the utility of which he himself discovered, could not be used to show equivalence even though the applicants also disclosed that the prior art amino compounds performed a similar function."). Paragraph [0078] of the specification teaches multiple embodiments of the invention, including (1) sensor layers comprising a semiconductor and (2) sensor layers comprising metals or metal oxides. Applicants' teaching of multiple embodiments cannot be used to plug a hole in an applied reference – Chan does not teach the use of a semiconductor sensor – nor can Applicants' teaching be used as evidence that a metal is equivalent to a semiconductor as alleged by the Examiner. Contrary to the assertions of the Examiner, Chan fails to teach "passing the labeled proteins, polypeptides or peptides through one or more nanopores, an inner surface of the nanopores coated with

a semiconductor material" as recited in independent claim 1. Applicants therefore respectfully request withdrawal of the rejection.

Rejection-35 U.S.C. 103

Claims 1, 3-5, 7-8,10-14 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chan EY (US Patent # 6210896). Claim 2, 6 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chan EY (US Patent # 6210896) as applied to claims 1, 3-5, 7-8, 10-14 and 16 above in view of Thompson et al (US Patent # 5324637). Applicants respectfully traverse the rejections.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). *See also* MPEP 2143.03. As discussed above, neither US Patent No. 6,210,896 nor US Patent No. 6,355,420 teaches "passing the labeled proteins, polypeptides or peptides through one or more nanopores, an inner surface of the nanopores coated with a semiconductor material" as recited in independent claim 1. Thompson teaches a "method for coupling transcription and translation from DNA using a solution comprising a eukaryotic cell-free extract." (Abstract). Thompson, however, does not teach "passing the labeled proteins, polypeptides or peptides through one or more nanopores, an inner surface of the nanopores coated with a semiconductor material." Indeed, none of the applied references either singly or in combination teaches or suggests "passing the labeled proteins, polypeptides or peptides through one or more nanopores, an inner surface of the nanopores coated with a semiconductor material" as recited in independent claim 1. Thus, none of the applied references either singly or in combination would have rendered obvious independent claim 1 or any of the claim that depend from independent claim 1. Applicants, respectfully request withdrawal of the rejections.

New Objection

Claim 1 was objected to for the following minor informality: "Claim 1 has been amended. However, the strikethroughs and the new addition with underlines did not scan through. It appears that the amendment texts are in different color. And this did not scan through, and it is a little hard to read." Applicants respectfully traverse the objection.

Applicants respectfully submit that claim 1 was sufficiently readable to allow the Examiner to read and reject claim. Further, Applicants note that Examiner has not indicated that correction is required. For the Examiner's convenience, however, Applicants provide below a single color copy of claim 1 showing the amendments made in the previous amendment.

1. (Currently amended) A method comprising:

a) ~~obtaining a plurality of proteins, polypeptides or peptides, and~~ placing ~~the~~ a plurality of labeled proteins, polypeptides or peptides in a plurality of chambers, such that different chambers contain a different type of labeled amino acid;

b) passing the labeled proteins, polypeptides or peptides through one or more nanopores, an inner surface of the nanopores coated with a semiconductor material;

c) detecting labeled amino acid residues in the labeled proteins, polypeptides or peptides;

d) compiling an amino acid distance map for each type of labeled amino acid; and

e) identifying the protein based on the distance maps.

35 U.S.C. 112, 2nd

Claims 2, 6 and 15 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner asserts "It is unclear if the labeled proteins, polypeptides or peptides encoded by the template nucleic acid are same as the labeled proteins, polypeptides or peptides recited in claim 1 or different from those recited in claim 1." Applicants respectfully traverse the rejection.

The embodiment recited in claims 2, 6 and 15 is described in paragraph [0036] of the specification. Paragraph [0036] recites in part, "As illustrated in FIG. 1, a nucleic acid template may be placed in one or more chambers 120, each chamber 120 to contain a different labeled amino acid. labeled proteins encoded by the nucleic acid template may be produced by *in vitro* translation or by linked transcription/translation." That is, the labeled proteins, polypeptides or peptides encoded by the template nucleic acid of claim 2 could indeed be the same labeled proteins, polypeptides or peptides of claim 1. One or ordinary skill in the art reading the specification would understand this. Applicants respectfully request withdrawal of the rejection.

35 U.S.C. 112, 1st

Claims 2, 6 and 15 were rejected under 35 U.S.C. 112, first paragraph. Specifically, claims 2, 6 and 15 were rejected because "the specification, while being enabling for producing labeled nucleic acid from the template nucleic acid, does not reasonably provide enablement for producing one or more labeled proteins, polypeptides or peptides encoded by the template nucleic acid of claim 1." Applicants respectfully traverse the rejection.

Paragraph [0036] of the specification explicitly teaches that "Labeled proteins encoded by the nucleic acid template may be produced by *in vitro* translation or by linked

transcription/translation." That is, the specification explicitly teaches at least two methods, (1) *in vitro* translation and (2) by linked transcription/translation, for "producing one or more labeled proteins, polypeptides or peptides encoded by the template nucleic acid." Thus, the specification is indeed enabled for "producing one or more labeled proteins, polypeptides or peptides encoded by the template nucleic acid" as recited in claim 1. Applicants respectfully request withdrawal of the rejection.

New claims

Support for new claims 32-35 can be found in at least paragraphs [0037]-[0039] and [0045] of the specification. No new matter has been added.

In view of the above amendment, applicant believes the pending application is in condition for allowance. An extension of time and related fees are submitted with the attached Petition. The Director is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 03-3975, referencing Docket No. 043395-0378252.

Respectfully submitted,

Dated: February 18, 2009

By: /Martin Sulsky/

Martin Sulsky
Registration No.: 45,403
Attorney for Applicant(s)

Customer No. 00909
PILLSBURY WINTHROP SHAW PITTMAN LLP
P.O. Box 10500
McLean, VA 22102
Telephone: 703-770-7900
Facsimile: 703-770-7901

- ATTACHMENTS